

000

~~972~~  
G10

22nd January,

7

Report on Examination of Sprent River - The Twins Area

Dates of Examination:

9th January to 18th January, 1957.

Party Leader:

B. Scott

Personnel Employed:

R. Both (Student) and E. Helitski  
(Dunman)

Man Days in the Field:

30 days  
(24 on examination 6 in camp)

Location of Camps:

The Sprent River is a left hand tributary of the Gordon River, approximately 33 miles south of Queenstown.

9th to 15th January - Two miles south of Sprent River, on the westerly limit of the Pre-Cambrian quartzites in this area.

15th to 18th January - Three miles south of Sprent River, immediately north of the two peaks known as "The Twins".

Means of Transport and Supply:

A.N.A. helicopter.

General Topography of the Area:

Typical ridge and valley topography. Height and size of the ridges vary from 1 mile wide and over 2000 feet high with D'Aguilar ridge on the western limit of the area examined, to a few hundred feet in width and elevation in the Pre-Cambrian country to the east. Generally the ridges are bare of vegetation and provide easy access, however, the intervening valleys are usually deep and steep sided, with a luxuriant vegetation which is difficult to pass through.

Previous Work:

E. G. Innes passed through the area in 1896.  
T. B. Moore passed through the area in 1900.

R.C. Hayles passed through the area in 1918.

M. Solomon investigated the D'Aguiar Range in December, 1956 (Report dated 18th December).

Geological Investigation and Findings:

The broad structure consists of two north-south trending anticlines which are associated with lines of major faulting.

(a) East Anticline

This anticline is the southerly continuation of the anticline established in the Elliott Range. The structure is approximately 7 miles wide from east to west and consists of a broad, open fold in Pre-Cambrian rocks.

The succession consists of hard, massive, white quartzites with interbedded softer quartzites which, by the addition of white mica, grade into grey-buff coloured mica schists. The hard quartzites (which form the ridges) usually have a distinct lineation which generally plunges northwards.

Current bedding and drag folds indicate that the succession is the right way up.

The central axis of the fold is marked by a wide (1-2 mile) valley and Mt. Lewis is situated on the eastern side of this valley on easterly dipping limb of the anticline.

The fold plunges northwards and immediately to the north of the Sprent River Owen Conglomerate unconformably overlies the Pre-Cambrian. The Conglomerate forms a bold ridge (Sprent Ridge) and the Sprent River has cut a deep gorge through this ridge to expose at least 250 feet of pinkish orthoquartzite and arkose, generally thin bedded (2" - 2'). Current bedding in this cliff face demonstrates that the succession is the right way up. The coarse breccia/conglomerates are absent from this section.

Northwards the ridge drops to the bend of the Gordon River and presumably the Conglomerate plunges beneath younger sediments (Silurian?).

(b) West Anticline

This anticline is clearly outlined by the outcrop of the Owen Conglomerate which forms the line of the D'Aguilar Ridge on its western limb, and the lower and less well defined ridge which culminates in "The Twins" on its eastern limb.

The fold plunges northwards beneath younger rocks; the centre of the fold exposes an area of Dundas sediments which appear to be "opening out" to the south.

The Conglomerate of the east limb consists of thick to very thick bedded breccia/conglomerate with quartz pebbles up to 4 inches in diameter.

From the aerial photographs there would appear to be another fold (syncline) immediately to the west of the D'Aguilar Ridge.

(c) Area between the east and west anticlines

In the Cataract River area (10 miles to the north of the Sprent River) the two anticlines are undoubtedly separated by a complementary syncline. In the Sprent River area, the zone between these two folds appears to be a zone of faulting on NNE-SSW lines.

(d) Faulting

The possibility of strong faulting on N - S lines on the western side of the D'Aguilar Ridge has already been suggested (16th December, 1956).

Major faulting is also suggested on the east side of the D'Aguilar Ridge, within the east limb of the west anticline, and between the east and west anticlines.

Judging by the continuity of the quartzite ridges in the Pre-Cambrian faulting on E-W lines can be neglected. However, in the east limb of the D'Aguilar structure the ridges appear to be displaced, north side moved west, which could indicate faults running in this E-W direction.

(e) Mineralisation

Quartz/hematite mineralisation is noticeable in the Owen Conglomerate on the east limb of the D'Aguilar anticline.

General Conclusions:

- (a) The area is directly on the southerly continuation of the Lyell Shear.
- (b) The area is strongly folded and thought to be strongly faulted on N-S lines.
- (c) There are indications that minor E-W faulting exists within the D'Aguilar anticline.
- (d) The Dundas group, after plunging beneath younger sediments approximately 25 miles to the north, re-appears and is commencing to "open out" to the south.
- (e) The <sup>combination</sup> continuation of folding, faulting and re-appearance of Dundas sediments makes it an area of prime importance for airborne geophysical work.

*B. Scott*

B. Scott